Appendix 7

Wildlife Effects
Management Indicator Species

Additional Information to the Environmental Assessment for the Proposed Amendment to the Green Mountain National Land and Resource Management Plan for Threatened, Endangered and Sensitive Species

Introduction

Discussion of the Green Mountain National Forests (GMNF's) affected environment, direct, indirect and cumulative effects relative to the Forest's wildlife program can be found on pages 35 through 38 of this Environmental Assessment (EA). The discussion reviews effects associated with all alternatives of the EA, for all of the Forest's wildlife species – including those species identified as Management Indicator Species (MIS). The purpose of this appendix is to more clearly display how conclusions regarding any impacts associated with the Proposed Action and Alternatives to MIS species were developed and integrated into this EA.

Table 1 displays the GMNF's MIS, and the habitat they are either most commonly associated with, or dependent upon. Following the table is a description of each MIS species' habitat relationship and discussion of potential affects of the Proposed Action and Alternatives.

Table 1 – GMNF's Management Indicator Species

Animal Species	Habitat Community
chestnut-sided warbler	hardwood sapling
barred owl	mature hardwood
snowshoe hare	regenerating, young softwood
blackpoll warbler	high elevation, mature softwood
white-tailed deer	low elevation, mature softwood
ruffed grouse	regenerating, young aspen and birch
beaver	aspen and birch
yellow-bellied sapsucker	mature aspen and birch
gray squirrel	mature oak
American woodcock	upland opening
brook trout	stream
American bittern	marsh
peregrine falcon	cliff
tree swallow	beaver flowage (ponds and streams)

Species by Species Analysis

Chestnut-sided Warbler (hardwood saplings)

The chestnut-sided warbler was selected as a MIS for the regenerating northern hardwood community. The chestnut-sided warbler's dependence on dense, shrubby vegetation makes it an ideal indicator for this type of habitat. This bird will be well distributed throughout regenerating woodland clearings and will often be associated with shrubby edges. Chestnut-sided warblers breed and feed in shrubby vegetation. They utilize brushy stream banks, roadside thickets, old fields, woodland clearings and previously burned areas. The early second growth sprouts of regenerating hardwoods, from 0-9 years of age, duplicate this vegetative condition.

Data collected for the Breeding Bird Survey from 1987 through 1998, shows a 0.2% increase of this species along 23 Vermont routes. Periodic surveys within the GMNF give no clear indication of population trends on the GMNF.

Current Forest Plan direction (Alternative 1) provides for this habitat primarily through even-aged forest management prescriptions. The retention of additional potentially suitable roosting trees (for Indiana bats) in areas receiving timber treatments (as prescribed by alternatives 3 and 5), will have no detectable effect to the habitat conditions preferred by this species, nor to the population of this MIS within the National Forest.

Barred Owl (mature hardwood)

Barred owl was selected as a MIS for the mature and old growth northern hardwood communities on the GMNF (mature hardwood being defined as stands more that 60 years of age, old growth hardwood being defined as stands greater than 170 years of age). Due to their dependence upon suitable cavity trees for nesting, they are good indicators of the quality and availability of the communities that include these habitat components. They exhibit a limited tolerance to human activity – selecting the more interior (farther from roads and less likelihood of disturbance) hardwood habitats for their nesting territories.

GMNF staff has conducted "hoot count" surveys along pre-determined routes on the GMNF. Data collected during these surveys did not indicate discernable population trends on the GMNF. Although no population trend can be detected at this time, this species is wide spread through the GMNF, and is repeatedly found on all of our pre-determined survey routes.

This amendment holds potential to increase potentially suitable nesting sites in stands receiving timber treatments. Alternatives 3 and 5 direct that additional trees, potentially suitable for Indiana bat roosting, are to be retained; these same trees may also be suitable for barred owl nesting. At this time, all current information provides no indication that barred owl populations are being adversely affected through lack of

suitable nesting sites. It is unlikely that the retention of these additional potentially suitable nesting sites will have a detectable effect to the GMNF's barred owl population. This determination is due in large part, to the limited amount of acreage being addressed by this amendment. These non-detectable changes to MIS populations will hold no cumulative effect to Vermont's populations of this species.

Snowshoe Hare (regenerating, young softwood)

Snowshoe hare are similar to white-tailed deer, in that they are both relatively common, hunted species that rely on the National Forest's softwood community. They differ a bit from deer, in that hare prefer greater tree density and lower cover characteristics of young and regenerating conifer.

GMNF staff has conducted track-counting surveys in pre-determined areas on the GMNF. Data collected during these surveys did not indicate discernable population trends on the GMNF. Although no population trend can be detected at this time, this species is wide spread through the GMNF, and is repeatedly found on all of our pre-determined survey areas.

Communities potentially affected by this amendment are those with a mixture of hardwood and softwood trees. Adjustment to these communities is limited to the retention of a few additional potentially suitable roost trees per acre, and the arrangement of these retention trees. These minor changes will have no effect to the population of snowshoe hare on the GMNF. Preferred hare habitat (conifer community) is not considered suitable Indiana bat habitat, so terms and conditions of the Biological Opinion do not apply. Harvest prescriptions for conifer stands with no hardwood components would not be affected by this amendment, resulting in no change to our current management and habitat conditions.

Blackpoll Warbler (high elevation, mature softwood)

The blackpoll warbler was selected as a MIS for the high elevation red spruce and balsam fir community on the GMNF. Blackpoll warblers breed in the mountains of New York, Vermont, and New Hampshire and winter in Guiana and from Venezuela to Brazil. Nests are usually built in conifers within 2 meters of the ground.

In June 2001, staff from the University of Vermont analyzed data collected from 4 GMNF transects (1991-2000) found a 6.3 % annual increase of this species over the past 10 years. Degree of certainty about this trend is extremely high (statistically significant) due to a low level of population variation between years.

This amendment makes no adjustment to GMNF management of the high elevation coniferous habitat conditions utilized by blackpoll warblers – therefore this amendment has no effect to this MIS.

White-tailed Deer (low elevation, mature softwood)

The white-tailed deer was selected as a MIS for the mature and old growth red spruce, balsam fir, and hemlock components of the GMNF. It is recognized that deer utilize other components of the Forest as well, however the spruce-fir and hemlock communities were selected as the habitat upon which deer depend upon to survive the harsh northern New England winters.

Annual population data is collected by the Vermont Fish & Wildlife Department and reported to the GMNF. This data indicates that white-tailed deer population in Vermont is stable to slightly increasing; over the same time period, deer populations on the GMNF are stable to slightly decreasing.

Communities potentially affected by this amendment are those with a mixture of hardwood and softwood trees. Adjustment to these communities is limited to the retention of a few additional potentially suitable roost trees per acre, and the arrangement of these retention trees. These minor changes will have no effect on the population of white-tailed deer on the GMNF. Preferred white-tailed deer winter habitat (predominately softwood stands) is not considered Indiana bat habitat, so terms and conditions of the Biological Opinion do not apply. Harvest prescriptions for primarily conifer stands would not be affected by this amendment, resulting in no change to our current management and habitat conditions.

Ruffed Grouse (regenerating, young aspen and birch)

The ruffed grouse was selected as a MIS for regenerating and young aspen/birch communities. The GMNF does not contain large tracts of pure aspen; however, small pockets and inclusions are distributed throughout the lower elevations. A majority of the GMNF's birch communities occur at higher elevations; these stands tend to be larger in size and more homogeneous than the aspen.

This species is widely distributed in the GMNF. Periodic drumming surveys along pre-designed routes give no clear indication of population trends on the GMNF. Data collected for the Breeding Bird Survey from 1987 through 1998, shows a 13.2% increase of this species along 6 Vermont routes.

Current Forest Plan direction (Alternative 1) provides for this habitat primarily through even-aged forest management prescriptions. The retention of a few additional potentially suitable roosting trees per acre in areas receiving timber treatments (as prescribed by alternatives 3 and 5), will have no detectable effect to the habitat conditions preferred by this species, nor to the population of this MIS that occurs on the National Forest.

Beaver (regenerating and young, birch and aspen)

The beaver was selected as a MIS for the regenerating and young birch and aspen communities on the GMNF. They are generalized herbivores, specialized for aquatic life, and are therefore associated with these communities in association with mountain streams. Although they are generalists and can adapt their foraging habits to a variety of environments, beavers have been shown to prefer quaking aspen and the more tender parts of other woody plants such as leaves, twigs and bark.

A 1994 GMNF report entitled "Beaver: Management Indicator Species Monitoring Results, Discussion and Assessment" compared 1983 and 1993 aerial surveys of active and inactive ponds as well as the total acres of occupied habitat. The report concluded that there had been a significant increase in beaver occupation, and presumably population, in this time interval.

This amendment makes no adjustment to GMNF management of riparian birch and aspen habitat conditions preferred by beavers – therefore this amendment has no effect on this MIS.

Yellow-bellied Sapsucker (mature aspen and birch)

The yellow-bellied sapsucker was selected as a MIS for the mature and old growth aspen and birch communities. Sapsuckers are primarily cavity nesters, excavating their own cavities. Runde (1981) found that the majority of sapsucker nests he studied were in quaking aspen, although they also utilized red maple, birch and beech. Regardless of the species, the trees were associated with the following characteristics: wood decay conks (*Fomes fomentarius* and *Phellinus tremulae);* branch stubs; broken tops; bark cover of at least 50% of the tree; and previously excavated cavities.

In June 2001, staff from the University of Vermont analyzed data collected from 4 GMNF transects (1991-2000) found a 14.7 % annual increase of this species over the past 10 years. Degree of certainty about this trend is extremely low due to a high level of population variation between years. This trend is supported by data collected by the Breeding Bird Survey – from 1987 through 1998; the BBS shows a 10.3% increase of this species along 20 Vermont routes.

Current Forest Plan direction (Alternative 1) provides for this habitat primarily through reserving potentially suitable nesting sites in stands receiving timber treatments. Alternatives 3 and 5 direct that additional trees, potentially suitable for Indiana bat roosting, are to be retained; these same trees may also be suitable for yellow-bellied sapsucker nesting. At this time, all current information provides no indication yellow-bellied sapsucker populations are being adversely affected through lack of suitable nesting sites. It is unlikely that the retention of these additional potentially suitable nesting sites will have a detectable effect to the GMNF's yellow-bellied sapsucker population. This determination is due in large part, to the limited amount of acreage being addressed by this amendment. These non-detectable

changes to MIS populations will hold no cumulative effect to Vermont's populations of this species.

Gray Squirrel (mature oak)

The gray squirrel was selected as a MIS for the mature and old growth oak communities on the GMNF. Due to the squirrel's preference for acorns, squirrel relationships to the oak communities of the Forest make it a good indicator of management effects. Gray squirrels occur in hardwood as well as mixed hardwood-coniferous forests, and concentrate in areas of mast producing trees such as red oak, beech, hickory and butternut.

The GMNF has conducted nest surveys along pre-designated routes to determine relative changes in gray squirrel abundance based on leaf nest counts. The results from these surveys do not indicate any clear population trends.

This amendment holds potential to increase the number of mast bearing hickory trees on the GMNF, as an indirect effect to the US Fish and Wildlife Service's (FWS's) condition to minimize risk of harm to Indiana bat – through the elimination of shagbark hickory cutting. Although the Forest Plan standards and guidelines currently give direction for the retention of hard mast trees (including shagbark hickory) during timber harvest treatments, this amendment gives primary focus to shagbark hickory retention and holds potential to increase this tree's occurrence in areas after they have been cut. Due to the small population of shagbark hickory on the National Forest, the limited number of acres receiving timber cutting treatment and legal harvest of gray squirrels, it is unlikely that this amendment will result in a detectable change to the population of gray squirrel on the GMNF. These non-detectable changes to MIS populations will hold no cumulative effect to Vermont's populations of this species.

American Woodcock (upland opening)

The American woodcock was selected as a MIS for the permanent openings on the GMNF. Because woodcock have highly specific habitat requirements, including the necessity of upland openings for the males' courtship display, their population levels are susceptible to change resulting from habitat alteration. These display grounds are usually abandoned fields, forest cutting or other openings, and range from less than 1 acre to greater than 100 acres.

The U.S. Fish and Wildlife Service singing-ground survey data indicates an overall trend, between 1990 and 2000, of – 3.5% per year in the Eastern Region (that includes Vermont). Long-term trends for Vermont also indicate a population decline. In 1996, staff of Middlebury College analyzed seven years of woodcock survey data collected from the GMNF. This analysis showed no statistically significant change in woodcock populations within the study sites.

This amendment makes no adjustment to GMNF management of habitat conditions for American woodcock – therefore this amendment has no effect on this MIS.

Brook Trout (stream)

Brook trout was selected as a MIS for small headwater and other streams on the GMNF. Optimal habitat south of Canada has been characterized as "… clear, cold spring-fed water, a silt free rocky substrate with riffle-run areas, and approximate 1:1 pool-riffle ratio with areas of slow deep water, well vegetated stream banks, abundant instream cover, and relatively stable water flow, temperature regimes and streambanks."

Brook trout are monitored annually in streams throughout the GMNF. Monitoring of stream habitat restoration projects implemented between 1988 and 2000 indicate that brook trout and their habitat have benefited (from these projects). Preliminary analyses are showing substantial increases in larger size brook trout and young fry in stream reaches where projects have been implemented. These annual surveys also provide information on existing fish habitat conditions and habitat trends. GMNF streams are found to continue to provide good habitat for native fish species.

This amendment makes no adjustment to GMNF management of habitat conditions for brook trout – therefore this amendment has no effect on this MIS.

American Bittern (marsh)

The American bittern was selected as a MIS for remote wetland areas on the GMNF that are dominated by marshy vegetation. American bitterns nest singly on both wet and dry ground, near or in freshwater swamps, marshes, bogs, or reedy lakes. Slow rivers or streams with dense vegetation along their borders provide appropriate habitat as well. Cover commonly consists of tall vegetation, such as reeds, cattails or bulrushes.

This species is rarely found on the GMNF; nesting has never been verified on GMNF lands. Data collected for the Breeding Bird Survey from 1987 through 1998, shows a 21.2% increase of this species along 4 Vermont routes.

This amendment makes no adjustment to GMNF management of habitat conditions for American bittern – therefore this amendment has no effect on this MIS.

Peregrine Falcon (cliff)

The peregrine falcon was selected as a MIS for mountain cliff sites on the GMNF. Typical peregrine nest habitat has been described as cliffs with sheer rock faces along mountain ridges overlooking open expanses of river valleys. Slopes below the cliffs are commonly wooded, while the areas above the cliffs are either semi-open or

wooded. At this time, disturbance of nesting sites is considered the greatest threat to the continued recovery of this species.

Populations of this species continue to grow throughout Vermont and the GMNF. In 1987 no free-living peregrine falcons nested on the Forest; in 2001 the total was 3 pairs of free-living peregrine falcons successfully nesting on the GMNF. Annually, each nesting attempt on the GMNF is individually assessed for disturbance potential – with various protected measures being utilized to secure those sites at risk.

This amendment makes no adjustment to GMNF management of habitat conditions for peregrine falcon – therefore this amendment has no effect on this MIS.

Tree Swallow (beaver flowage)

The tree swallow was selected as a MIS for the beaver flowage wetland community. This species utilizes tree cavities in wetland habitats for nesting, and the wetland habitats themselves for feeding. Beaver created wetlands provide habitat for a variety of wildlife. In this environment, tree swallows are dependent upon the cavity trees within the beaver flowage and along the edge of the forest opening that may or may not be flooded as the pond ages.

Data collected for the Breeding Bird Survey from 1987 through 1998, shows a 4.9% increase of this species along 24 Vermont routes.

This amendment makes no adjustment to GMNF management of habitat conditions for tree swallow – therefore this amendment has no effect on this MIS.

Findings

This proposed Forest Plan amendment, designed to update our conservation efforts for threatened, endangered and sensitive species, entails no action that would significantly alter habitat conditions identified for MIS monitoring and assessment. The mix of these vegetative communities is not altered by this proposed amendment or any of its alternatives. Two components of these vegetative communities will be slightly altered; specifically the occurrence of shagbark hickory (for all action alternatives) and the occurrence of wildlife reserve trees (for alternatives 3 and 5) in areas receiving timber treatments. Neither of these two component changes will result in detectable changes in those MIS species populations likely to benefit from these adjustments.

Gray squirrel will benefit from the retention of shagbark hickory; however, the degree of benefit is limited by the rarity of occurrence of hickory on the GMNF, and by the limited timber cutting activity on the Forest. Species utilizing tree cavities in upland hardwood communities are also likely to benefit from the retention of additional potentially suitable roost trees (for Indiana bats) in areas receiving timber cutting. MIS using these components are the barred owl and the yellow-bellied sapsucker. As with the gray squirrel, it is unlikely that the adjustments associated with alternatives 3 or 5 will result in

a detectable change in the GMNF population of either of these MIS (due to the limited number of acres being effected, and limited "increment" of adding one retention tree per acre). No other adjusts are made to MIS communities or community components, and therefore result in no effect to other MIS.

Due, in large part, to the very limited habitat changes associated with this proposed amendment and its alternatives, these non-detectable changes to MIS populations will hold no cumulative effect to Vermont's populations of these species.